Claims

What is claimed is:

Claim 1. A method of horizontally structured CAD/CAM manufacturing for fixtures and tooling, comprising:

selecting a contact area geometry for tooling or fixture modeling;

creating extracts from a master process model;

generating a tooling model corresponding to said contact area geometry;

virtual machining said tooling model to generate said fixtures and tooling;

generating machining instructions and drawings to create said fixtures and tooling; and

said tooling model exhibiting an associative relationship with said contact area geometry.

Claim 2. The method of Claim 1 wherein said contact area geometry corresponds to the dimensions of said tool or fixture.

Claim 3. The method of Claim 1 wherein said contact area geometry is two-dimensional.

Claim 4. The method of Claim 1 wherein said associative relationship is a parent/child relationship.

Claim 5. The method of Claim 1 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

Claim 6. The method of Claim 1 wherein said tooling model exhibits an associative relationship with said contact area geometry.

Claim 7. The method of Claim 6 wherein said associative relationship is a parent/child relationship.

Claim 8. The method of Claim 1 wherein said machining instructions and drawings exhibit an associative relationship with said tooling model.

Claim 9. The method of Claim 8 wherein said associative relationship is a parent/child relationship.

Claim 10. The method of Claim 1 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

Claim 11. The method of Claim 10 wherein said extracts are used to generate manufacturing process sheets.

Claim 12. A manufactured part created by a method of horizontally structured CAD/CAM manufacturing for fixtures and tooling, comprising:

a contact area geometry selected from a master process model for tooling or fixture modeling;

extracts created from said master process model;

a tooling model corresponding to said contact area geometry including virtual machining said tooling model to generate said fixtures and tooling;

said fixtures and tooling created by machining in accordance with a machining instruction; and

said tooling model exhibiting an associative relationship with said contact area geometry.

Claim 13. The manufactured part of Claim 12 wherein said contact area geometry corresponds to the dimensions of said tool or fixture.

Claim 14. The manufactured part of Claim 12 wherein said contact area geometry is two-dimensional.

Claim 15. The manufactured part of Claim 12 wherein said associative relationship is a parent/child relationship.

Claim 16. The manufactured part of Claim 12 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

Claim 17. The manufactured part of Claim 12 wherein said tooling model exhibits an associative relationship with said contact area geometry.

Claim 18. The manufactured part of Claim 17 wherein said associative relationship is a parent/child relationship.

Claim 19. The manufactured part of Claim 12 wherein said machining instructions and drawings exhibit an associative relationship with said tooling model.

Claim 20. The manufactured part of Claim 19 wherein said associative relationship is a parent/child relationship.

Claim 21. The manufactured part of Claim 12 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

Claim 22. The manufactured part of Claim 21 wherein said extracts are used to generate manufacturing process sheets.

Claim 23. A storage medium encoded with a machine-readable computer program code for horizontally structured CAD/CAM manufacturing for fixtures and tooling, said storage medium including instructions for causing a computer to implement a method comprising:

creating extracts from a master process model;

selecting a contact area geometry for tooling or fixture modeling;

generating a tooling model corresponding to said contact area geometry;

virtual machining said tooling model to generate said fixtures and tooling;

generating machining instructions and drawings to create said fixtures and tooling; and

said tooling model exhibiting an associative relationship with said contact area geometry.

Claim 24. The storage medium of Claim 23 wherein said contact area geometry corresponds to the dimensions of said tool or fixture.

Claim 25. The storage medium of Claim 23 wherein said contact area geometry is two-dimensional.

Claim 26. The storage medium of Claim 23 wherein said associative relationship is a parent/child relationship.

Claim 27. The storage medium of Claim 23 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

Claim 28. The storage medium of Claim 23 wherein said tooling model exhibits an associative relationship with said contact area geometry.

Claim 29. The storage medium of Claim 28 wherein said associative relationship is a parent/child relationship.

Claim 30. The storage medium of Claim 23 wherein said machining instructions and drawings exhibit an associative relationship with said tooling model.

Claim 31. The storage medium of Claim 30 wherein said associative relationship is a parent/child relationship.

Claim 32. The storage medium of Claim 23 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

Claim 33. The storage medium of Claim 32 wherein said extracts are used to generate manufacturing process sheets.

Claim 34. A computer data signal for horizontally structured CAD/CAM manufacturing for fixtures and tooling, said computer data signal comprising code configured to cause a processor to implement a method comprising:

creating extracts from said master process model;

selecting a contact area geometry for tooling or fixture modeling;

generating a tooling model corresponding to said contact area geometry;

virtual machining said tooling model to generate said fixtures and tooling;

generating machining instructions and drawings to create said fixtures and tooling; and

said tooling model exhibiting an associative relationship with said contact area geometry.

Claim 35. The computer data signal of Claim 383 wherein said contact area geometry corresponds to the dimensions of said tool or fixture.

Claim 36. The computer data signal of Claim 34 wherein said contact area geometry is two-dimensional.

Claim 37. The computer data signal of Claim 34 wherein said associative relationship is a parent/child relationship.

Claim 38. The computer data signal of Claim 34 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

Claim 39. The computer data signal of Claim 34 wherein said tooling model exhibits an associative relationship with said contact area geometry.

Claim 40. The computer data signal of Claim 39 wherein said associative relationship is a parent/child relationship.

Claim 41. The computer data signal of Claim 34 wherein said machining instructions and drawings exhibit an associative relationship with said tooling model.

Claim 42. The computer data signal of Claim 41 wherein said associative relationship is a parent/child relationship.

Claim 43. The computer data signal of Claim 34 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

Claim 44. The computer data signal of Claim 43 wherein said extracts are used to generate manufacturing process sheets.